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Research Note

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EARLY SPRING GRAZING VALUES OF FOUR SEEDED SPECIES ON ABANDONED CROPLAND IN NORTHEAST WASHINGTON[1]

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Many ranchers in the mountainous parts of northeast Washington are faced with an inadequate supply of early spring-late fall forage. Livestock operators in Ferry, Pend Oreille, and Stevens Counties, largely dependent upon Federally owned lands for summer grazing, must provide forage during the "off" period. The most critical time in this area occurs between the close of winter feeding and the opening date of summer ranges--usually late May at the lower elevations. However, growing conditions vary and in some years the opening date of summer ranges may be delayed. In those years, a delay of 1 to 2 weeks, with operations that are closely geared to the usual or average opening date, frequently results in overuse of the home range.

Ranch units in this area commonly consist of two or more homesteads that have been consolidated to form an economic unit. Not infrequently, the homesteader plowed under lands best suited for grass and timber production in an effort to provide a livelihood for his family. Much of this land was abandoned because of its low productivity and now supports a weedy cover having little or no grazing value. Such land contributes little to the livestock economy of the region and its restoration to a productive status by natural means occurs very slowly. Artificial seeding to adapted forage species, however, offers a possible means of quickly returning these areas to the production of critically needed early spring forage which would relieve the grazing pressure and thus encourage proper management of native range areas.

In cooperation with A. H. Bremner of Ferry County, a study was initiated in 1952 by the Intermountain Forest and Range Experiment Station to determine the early spring grazing value of several grass species as compared with that of weedy vegetation on marginal abandoned cropland. The test area which had been rye-cropped periodically until 5 years preceding the study, produced about 8 to 10 bushels of grain or half a ton of hay per acre.

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[1] The Intermountain Forest and Range Experiment Station gratefully acknowledges the initial planning of the study by Grant A. Harris, formerly with this Station.

Located at an elevation of 2,650 feet, the area receives about 14 inches of precipitation annually, approximately one-half of which occurs during the months of April through September. The period from June to September is normally frost-free. July air temperatures average 64.9° F. The bench top of glacial outwash which the study area occupies has a droughty, excessively drained, gravelly loam soil with a poor waterholding capacity and low humus content.

Five 6-acre pastures were established and fenced, 4 of which were seeded to species that had shown their adaptability to local conditions in earlier small plot trials. The untreated fifth pasture served as a check. A good seedbed was prepared and in late April one pasture each was drilled to intermediate wheatgrass, Manchar smooth brome, pubescent wheatgrass, and standard crested wheatgrass. Two growing seasons were allowed for good stand establishment. Seedings were clipped once in 1952 to prevent maturation of weedy species and in 1953 crested wheatgrass, intermediate wheatgrass, and pubescent wheatgrass seed was harvested. The pastures were grazed for the first time in May 1954 using 6 wet cows per pasture. Individual cow and grouped calf weights were obtained immediately before and after the grazing period in each pasture.

RESULTS

Excellent stands were obtained with crested wheatgrass, intermediate wheatgrass, and smooth brome. The pubescent wheatgrass stand was unexplainably spotty. Some winterkill occurred with smooth brome in the first year, particularly on the windswept portions of the pasture.

In the fall of 1953 after two growing seasons, 300, 135, and 100 pounds of cleaned seed were obtained from the crested wheatgrass, intermediate wheatgrass, and pubescent wheatgrass pastures, respectively. Timelier harvesting would have at least doubled the yield, for an estimated one-half to two-thirds of the seed of each species had shattered. At current seed prices, then, a gross return of almost $25 an acre was realized from the 3 pastures. The smooth brome seed was not harvested.

Growth and development of the grasses was retarded during early spring of 1954. However, in order to graze the pastures before the cattle were taken to summer range they were stocked on May 2. At this time, cheatgrass, crested wheatgrass, intermediate wheatgrass, pubescent wheatgrass, and smooth brome averaged 1.0, 4.0, 4.9, 4.0, and 4.3 inches in height, respectively. The check pasture (untreated) was not stocked because of the limited amount of herbage produced by cheatgrass and forbs.

During the grazing period, herbage production was greatest for intermediate wheatgrass followed by crested wheatgrass, pubescent wheatgrass, and smooth brome in that order (table 1). The check pasture produced the least herbage, most of which was composed of forbs. Smooth brome produced the greatest amount of regrowth (1,162 pounds) during the

Table 1.--Herbage, cow-calf gains, and days of use provided by four seeded species and cheatgrass

Pasture	Cow-calf use	Total gains		Herbage production (air-dry wt.)		
		Cows	Calves	Through grazing period	After grazing period	Total
	Days	Pounds		Pounds		
Intermediate wheatgrass	144	560	240	1,454	1,047	2,501
Crested wheatgrass	96	420	170	771	932	1,703
Pubescent wheatgrass	78	390	145	538	1,059	1,597
Smooth brome	78	195	125	489	1,162	1,651
Unseeded (Cheatgrass)				63	248	311
(Forbs)				264	322	586

period following grazing and the end of the growing season. Pubescent wheatgrass ranked second, intermediate wheatgrass third, and crested wheatgrass fourth. The shorter period of use of smooth brome and pubescent wheatgrass is reflected in the higher yields of these species during this period. Intermediate wheatgrass provided 2,501 pounds of herbage for the entire season followed by crested wheatgrass, smooth brome, and pubescent wheatgrass. Total production of the latter 3 species was quite similar. Herbage produced by cheatgrass during the growing season was less than smooth brome produced during the early spring period.

Intermediate wheatgrass provided 144 animal-days' use, followed by crested wheatgrass with 96, and pubescent wheatgrass and smooth brome with 78 each. Total cow and calf gains for the grazing period were greatest for intermediate wheatgrass at 560 and 240 pounds, respectively. Animal production tended to parallel forage production for the four species (table 1).

Species utilization was quite similar at the close of the grazing periods. A comparison of stubble and ungrazed plant heights at that time showed that herbage in the smooth brome, intermediate wheatgrass, crested wheatgrass, and pubescent wheatgrass pastures had been utilized 80, 78, 77, and 76 percent, respectively.

DISCUSSION

Despite unfavorable growing conditions crested wheatgrass, intermediate wheatgrass, pubescent wheatgrass, and smooth brome showed their superiority to cheatgrass in providing early spring forage. Intermediate wheatgrass was outstanding on all counts--earliness of growth, volume of herbage produced, and number of animal days provided. Crested wheatgrass ranked second. Ranking third, pubescent wheatgrass would ordinarily displace crested wheatgrass if the stands were comparable. In this test, stand density of pubescent wheatgrass was only about half that of crested wheatgrass. Smooth brome ranked fourth and was considered the least desirable because of its relatively low productivity early in the season. Even so, smooth brome produced eight times as much herbage as cheatgrass did during the early spring period.

The relative production of the seeded species was reflected in animal gains early in the spring. Greatest gains during this period were made on the most productive species, intermediate wheatgrass. As with herbage production, crested wheatgrass and pubescent wheatgrass gains ranked second and third. Smallest gains resulted from smooth brome which also produced the least amount of early spring forage. Cow gains at this season of the year are not of major importance in a cow-calf operation, since much of the gain may represent merely a recovery of weight lost during the winter feeding period. Such gains do, however, indicate the adequacy of the forage supply.

Available herbage dictates the amount of grazing use that can be obtained from a given range or pasture. To maintain good plant vigor and for soil protection, the accepted practice is to graze about one-half the current plant growth. In this test, however, heavier grazing was permitted since the pastures were to be grazed for a short period early in the spring of each year only. Under such a practice, approximately 2 months of the growing season remain in which the plants can recover from the effects of grazing.

Intermediate wheatgrass now appears to be the most suitable species for revegetating abandoned cropland and other deteriorated lands to increase early spring livestock forage supplies on relatively unproductive soils in this area. Although less satisfactory, crested wheatgrass and pubescent wheatgrass are also adapted to local growing conditions. Smooth brome, albeit many times more productive than weedy species on abandoned cropland, is not recommended for such sites. Rather, it should be confined to deeper, less droughty, and more productive soils.

By seeding essentially unproductive croplands to adapted forage species, the operator can do much to return these lands to the production of livestock forage to meet his seasonal needs. Seeding also affords the opportunity of manipulating management of native ranges to maintain them in a high state of productivity. Too, a good cover of vegetation minimizes soil loss. Frequently, as in this study, harvesting a seed crop during the establishment period of a seeded stand will more than pay seeding costs.

The early spring grazing evaluation of species used in this study is tentative and may be revised as more data become available.